in the Application 1:

Dr. Osker K. Wack et al

Ser. No.:

09/142,452

Filed:

January 19, 1999

For:

METHOD OF CLEANING OBJECTS

Examiner:

Alexander Markoff

Group:

1748

Assistant Commissioner for Peternts

Washington, DC 20231

## DECLARATION UNDER 37 C.F.R. 1.131

## Dear Sir:

We, Dr. Ceker K. Wack, Mr. Martin Hanek, and Mr. Kareten Lecemenn, declare as follows:

- 1. We are the inventors of the subject matter described and defined in the aboveidentified US Patent Application Serial No. 09/142,452. We can read and understand English and have read and understood this declaration.
- The acts relied upon to establish our earlier date of invention were carried out in a
   WTO member country, namely Germany.
- 3. Attached hereto as Exhibit A is a true and accurate copy of pages from the februatory notebook of Hildegard Nagy, a chamical engineer employed by the assignee company, who performed the following experiments according to our instructions and under our supervision. Because the notations were made in German. English translations are provided as superprists.
- 4. Prior to September 19, 1998, we actually reduced to practice the invention as presently claimed in the above-identified application. For example, prior to September 19, 1998, a solution of 10% dipropylene glycol mono n-propyl ether ("DPnP") in water was prepared according to our instructions and physical

- 5. A solution of 10% Downnol DPnP in H<sub>2</sub>O was also prepared and physical data were determined (see page 2 of the translation of the lab note book).
- 6. The cleaning ability of these solutions was evaluated by applying ultrasound to the solutions in order to clean flux from soldered circuit boards (see page 2 of the translation of the tab note book). The application of ultrasound served to agitate the solution and maintain the solution in the state of argenic-rich droplets dispersed within a continuous aqueous phase. As a result of these tests, we determined that DPnP and similar compounds mixed in water were excellent cleaning solutions that effectively cleaned both hydrophobic and hydrophilic contaminants from objects. As noted above, all these acts occurred in Germany before September 19, 1996.
- 7. We further declare that all statements herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application

DATE: 14 May 2003

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By: Mr. Martin Hansk

By: Mr. Martin Hansk

or any patent issuing thereon.

Mr. Kersten Zesemann

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## Official translation MPC r lated -Lab notes

9.02.96 (= Feb. 9th 1996)

Setup for the conducted experiment: Metal bars contaminated with oil residues. Are cleaned in the azeotrope mixture with ultrasound(US) at 85°C Rinsed with clean mix (refers to azeotrope mix) at 85-90°C with ultrasound. Result: Strong surface attack (surface penetration) on metal bars.

Corrosion related experiments with metal bars:

- Purasolv ML 25%with 10% DPnP in H<sub>2</sub>O plus 0.1 Chromate (at 90°C) Result: slight metal attack
- Purasolv ML 25%with 10% DPnP and 2.5 Aminobutanol in  $H_2O$  (=water) (at 90°C) Result: no attack visible, however product residues visible.

13.02.96 (= Feb.13<sup>th</sup> 1996)

- -Purasolv ML 25% 10% DPnP in H<sub>2</sub>O (at 50°C) Result: no attack, but spotty residues
- -Purasolv IPL 35% 10% DPnP in H<sub>2</sub>O (at 50°C) Result: no attack, no spots or residues
- Purasolv IPL 35% plus 10% DPnP in H<sub>2</sub>O (at 90°C) Result: Corrosion.

16.02.96 (= Feb. 16<sup>th</sup> 1996)

Dow DPnP 10% in  $H_2O$  at RT – clear. At around 30°C – cloudy and two separate phases – Addition of 5% DPNP product clear, repeated heating cycles through renewed heating the product turns cloudy again.

Dow DPnP 10% in  $H_2O$  – Determination of the flashpoint was done without agitation of the stirrbar  $\rightarrow$  unable to determine flashpoint.

9% DPnP in  $H_2O$  – through heating (turns cloudy at 42°C) – oily/grease like-droplets are visible on the surface.

8% DPnP in  $H_2O$  – with heating the product turns cloudy (45°C). oily/grease-like droplets on the surface.

7% DPnP in  $H_2O$  – turns cloudy at 50°C  $\rightarrow$  fewer oily/grease like-droplets as with 8% scenario.

Exhibit A - S/N 09/142,452 - attached to declaration under 37 C.F.R. 1.131 signed May 14, 2003 Total pages of exhibit: 7

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6% Dow's DPnP in H<sub>2</sub>O - cloudy at 56°C - ...
5% Dow's DPnP in H<sub>2</sub>O - cloudy at 63°C - ...
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21.02.96 (= Feb.21st 1996)

10% Dowanol DPnP in H2O, which will be named Zestron VD200- recipe Number 1

Physical Data:
Density – 0.997 g/cm3
Surface tension – 34.6 mN/m
Viscosity – 1.6 cSt
Refractive Index – 13474
Flashpoint – cannot be determined
Freezing point = -2°C
Boiling point = 100°C

26.02.96 (= Feb. 26<sup>th</sup> 1996)

11.03.96 (= March 11th 1996)

Evaluation of the cleaning ability of Zestron VD200 plus 0.3% amino-butanol in comparison to Zestron VD200 as well as Zestron FA.

Test object - soldered circuit boards with different low solid content fluxes.

Cleaning time:

3 minutes with ultrasound at 70°C and at 50°C for Zestron FA

respectively.

Rinsing:

3 minutes ultrasound with Zestron VD200, DI water

respectively. In the wash tank with Zestron FA

## Results obtained:

Cleaning with Zestron VD200 with the following fluxes:

IF2005 -

CCP L3 -

=> Solder pads/leads dulled, residues visible

α-grillo –

Cleaning with Zestron VD with 0.3% A-butanol (=aminobutanol)

IF2005 -

CCP L3 -

=> no improvement visible when compared to the standard.

a-grillo -

18.03.96 (= March 18th 1996)

Exhibit A - S/N 09/142,452 attached to declaration under 37 C.F.R. 1.131 signed May 14, 2003 Total pages of exhibit: 7

17.11.95 (= October 17th 1995)

Mixture: Water/solvent

Dowanol PM 53% in  $H_2O$  - Flashpoint = 53°C

Dowanol DPM 8,9% in H<sub>2</sub>O - Flashpoint = >100°C

**04.12.95** (= Dezember 4<sup>th</sup> 1995)

Cyclopentanon 57,6% in H<sub>2</sub>O Flashpoint 34°C

Furfurylalcohol 20% in H<sub>2</sub>O Flashpoint > 100°C

Flashpoint could not be determined.

11.12.95 (= Dezember 11<sup>th</sup> 1995)

Propoxypropanol (Dow PNP) 42% in H<sub>2</sub>O Flashpoint 49°C

11.01.96 (= January 11<sup>th</sup> 1996)

Furfurylalcohol 20% in H<sub>2</sub>O plus 5% Amino butanol in H<sub>2</sub>O Flashpoint could

not be determined

15.01.96 (= January 15<sup>th</sup> 1996)

Tetrahydrofufurylalcohol – 10.5% in H<sub>2</sub>O Flashpoint could not be determined Purasolv ML - 20% in H<sub>2</sub>O Flashpoint could not be determined Flashpoint could not be determined

**19.01.96** (= January 19<sup>th</sup> 1996) **22.01.96** (= January 22<sup>nd</sup> 1996)

Cleaning trials with Azeoptrope mixture of Tetrahydrofufuryl alcohol 20% in H<sub>2</sub>O Results not satisfactory.

8.02.96 (= February 8<sup>th</sup> 1996)

Purasolv ML 25% with Dow DPnP 10% in H<sub>2</sub>O – not able to determine results Cleaning trials with azeotropic mixtures as for example: ML 25% with Dow DPnP 10% in H<sub>2</sub>O.

Exhibit A - S/N 09/142,452 - attached to declaration under 37 C.F.R. 1.131 signed May 14, 2003 Total pages of xhibit: 7

I, Sylvain Chamousset, certify under penalty of the laws of the United States, that I am competent to translate from the German language to the English language and that the above is a true and correct translation into English of the German language document "Labor Versuchsdurchfuehrungen" attached hereto.

Mr. Sylvain Chamousset

March 27, 2003

Exhibit A - S/N 09/142,452 - attached to declaration under 37 C.F.R. 1.131 signed May 14, 2003 Total pages of exhibit: 7